



Socioeconomic Characteristics of Farmers, Profitability and Militating Factors Affecting Small Ruminant Production in Ondo State, South-West, Nigeria

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Abstract— The study investigated the socio-economic characteristics of small ruminant farmers, profitability and militating factors affecting small ruminant production in Ondo State, South-West, Nigeria. A multi-stage sampling technique was used to sample Two Hundred respondents (200) from the four Agricultural Development Programme (ADP) Zones in the study area, in which 25 farmers were randomly selected from 8 different communities. The respondents were accessed and interviewed using a well-structured questionnaire and interview guide, and data collected were analyzed using descriptive statistics such as frequencies and percentages, budgetary analysis and 4-Point Likert type scale. Findings revealed that 60.5% of the respondents were practising semi-intensive management systems, goats were the commonest animals reared by the farmers. The Return on Investment (ROI) was found to be 1.54 which implies that small ruminant producers will realize 1.54 on each naira expended, the gross margin and net farm income shows ₦253, 692.39 and ₦204, 327.08 respectively, Expense Structure Ratio (ESR) of 0.42 and gross ratio (0.45) which also revealed that total revenue accrued from small ruminant production is greater than total cost expended in the course of the business by 55. The study as well identified inadequate capital and high-interest rate of capital as the two most challenging constraints faced by the small ruminant farmers in the study area. Results obtained indicated that small ruminant production is a profitable venture mostly managed under the Semi-Intensive system and requires adequate capital for proper management of the animals.

Keywords— challenges, enterprise, farming, profitability, small ruminant.

I. INTRODUCTION

Among all the livestock that make up the farm animals in Nigeria, small ruminants, comprising sheep and goat constitute the farm animals largely reared by farm families in the country's agricultural system. The majority of rural owners of small ruminants are farmers involved in food and tree crop production, or women involved in food processing and marketing [1]. The importance of small ruminants (i.e. sheep and goats) to the socio-economic well-being of people in developing countries in the tropics in terms of nutrition, income and intangible benefits (e.g. savings,

insurance against emergencies, cultural and ceremonial purposes) cannot be overemphasized [2]. Sheep and goats are important livestock species in developing countries because of their ability to convert forages, and crop and household residues into meat, fibre, skin, and milk [3]. Sheep and goats play important roles in the socioeconomic and cultural lives of the people in the following ways: they provide meat and milk to humans, they produce wool, hair and skin and manure, they serve as a form of investment and in some cultures or communities in Nigeria, sheep and goats are used to as means of measuring someone's wealth and

they are used during burial ceremonies [4]. Diseases and inadequate nutrition (in terms of quality or quantity) constitute serious constraints to small ruminant production in Africa [5]. Nigeria, in recent times, is being faced by Fulani herdsmen's attack on farmers, thereby posing a great risk on the management and production of small ruminants. Good management practices in terms of adequate nutrition, disease prevention and control and breeding, are essential for improved small ruminant production.

In general, farm animals are poorly managed in Nigeria's agricultural system owing to the fact that the animals are mostly managed on free-range/extensive systems and semi-intensive systems. These management systems are influenced by cheap means of feeding the stock all year round. Based on this, the animals are thus allowed to roam the streets and neighbourhoods to fend for themselves with little or no special or conscientious provision of supplements for them. Although, commonly raised farm animals under the free-range and semi-intensive systems include sheep and goats, alongside chicken constitutes the major farm animals largely raised in these systems of livestock management by the Nigerian rural households or livestock farmers. This practice is believed to have some constraints which are believed to influence the profitability of the enterprise. Thus, this study will provide insight into the socioeconomic characteristics of the farmers, profitability and constraints of small ruminant production in Ondo State.

II. METHODOLOGY

The study was carried out in Ondo State, South-West Nigeria. The State has eighteen local governments which cover a land area of 14,793 square kilometres. Based on the result of 2006 census, the population was 3,441,024 [6]. Data used in this study was from the primary source and a total of 200 respondents were accessed and interviewed using a well-structured questionnaire and interview guide. A multi-stage sampling technique was used in selecting respondents for the study through the four Agricultural Development Programme (ADP) zones in the State. The purposive selection was used to select one local government from each of the four ADP zones (namely: Owo, Okitipupa, Ondo and Ikare zone) in the state. Two communities were purposively selected from the local governments in the second stage, while a random selection of 25 farmers from each of the eight communities earlier selected bringing was done in the third stage, making it a total of 200 respondents that were accessed and interviewed. Data from the study were analysed using descriptive statistics, budgetary analysis and a 4-Point Likert type scale.

III. RESULT

3.1 SOCIO-ECONOMIC CHARACTERISTICS OF RUMINANT FARMERS

Table 1 shows the sex distribution of the sampled ruminant farmers. The sampled small ruminant farmers are made up of 106 males and 94 females which are 53% and 47% respectively. This indicates that more males are practising small ruminant production than females. 1% of the farmers are less than 20 years of age, while 3.5% are between 21-30 years of age and 12.5% are between 31-40 years of age. The age range with the highest percentage of 32.5% were the small ruminant farmers between the age of 41-50 years of age, followed by farmers between the age of 51-60 years of age with 28.5% and 22% of them are above 60 years of age. The mean age of all the sampled small ruminant farmers is 51.4 years. The result revealed that 3.5% of the respondents were single, 71% were married, 3.5% were divorced, 19.5% were widowed and 2.5% were separated. This implies that majority of the small ruminants were married, some were widowed while very few were single, divorced and separated. The largest household size had within 1-5 members which is 50.5% of the total respondents, 43.5% had between 6-10 members and 6% had above 10 members. The average household size is 6, which implies that having a large household size helps to support small ruminant farming. 64.5% of the respondents were Christians, 34.50% of them were Islam and 1% of them practised other religions. This indicates that the majority of the small ruminant farmers practice Christianity, followed by Islamic religious practice. The educational level of small ruminant farmers from the result showed that 35% of the respondents had tertiary education, 27% had secondary education, while 12.5% had primary education. 4% of the respondents had no formal education and 4% also attempted primary education. The average years of education of the respondents is 11.2 years.

Table 1 shows the primary occupation of the respondents. The table reveals that 44.5% of the respondents were primarily farmers, 21.5% were Civil Servants, 8% were pensioners, 14% were Artisans, 1.5% were students while 10.5% of them had unspecified occupations (others). Majority of the respondents were primarily farmers, while civil servants and artisans. 53.5% of the respondents were engaged in off-farm income-generating activities while 46.5% were not. 83.5% of the respondents were not a member of any Cooperative Society while 16.5% were members of a Cooperative Society. The result revealed that 92% of the respondents did not take loan in the last production season while 8% of them took. Furthermore, Table 1 shows that 35% of the respondents had 1-10 years of farming experience, 32.5% of them had 11-20 years of farming experience, while 20% had 21-30 years of farming experience. Only 13.5% of the respondents had

more than 30 years of farming experience. 63.5% of the respondents were crop farmers, 22% of them were poultry farmers, 10.5% were fishery farmers, while the remaining 4% of the respondents were involved in snailry, rabbitry, and other farm activities. From the result, majority of the respondents were also engaging in crop farming, followed by poultry farming.

3.2 PROFITABILITY OF SHEEP AND GOAT PRODUCTION

Table 2 shows the budgetary analysis of sheep and goat production. The Budgetary analysis comprises total revenue and total cost of production. The table revealed that the cost of Nanny, Billy, Ewe, Kid and Ram with 30.70%, 15.34%, 10.80%, 9.41% and 8.70% respectively had high percentages of variable costs, while the cost of others, feed and fuel with 0.09%, 0.29% and 0.29% had the least. For fixed costs, the cost of land had the highest with 41.77% while the cost of others with 0.13% has the least. The table shows that the total variable cost was ₦115,648.38, the total fixed cost was ₦49,365.30 which made the total cost to be ₦165,013.68, while the total revenue was ₦369,340.76. The gross margin of the small ruminant production was ₦253,692.39 and the benefit-cost ratio was 2.24, which indicates that small ruminant enterprise is profitable.

3.3 CONSTRAINTS MILITATING AGAINST SMALL RUMINANT'S PRODUCTION IN THE STUDY AREA

Table 3 shows the constraints militating against small ruminant farmers in the study area ranked in order of the most challenging to the less challenging. The small ruminant farmers were faced with challenges which range from inadequate capital (Weighted Mean Score 3.51), High-interest rate of capital (WMS 3.46), Scarcity or high cost of land (WMS 3.29), High cost of transport (WMS 3.16), Vagaries of weather (WMS 3.12), and Theft (WMS 3.11) being the first ranked 6 challenges. The table indicates that the small ruminant farmers were majorly faced with the lack of capital as their major challenge. Theft posed a great challenge to the small ruminant production enterprise and this indicates that most of the farmers had experienced the theft of their stocks at one particular point or the other.

Too much rainfall (WMS 2.62), poisoning (WMS 2.59), Lack of proper care (WMS 2.52), High mortality rate (2.47), fluctuating quality of concentrates and forages (WMS 2.40) and Lack of rainfall (WMS 2.37) ranked the least 6 constraints in the table. Scarcity of skilled and diligent workers (WMS 2.90) was ranked 10th on the table, this could be attributed to the fact that most of the farmers made use of unskilled family labour in the small ruminant production, thereby posing a challenge to the enterprise. Also, Fulani herdsmen (WMS 2.92) was ranked 11th on the table. This showed that Fulani herdsmen insurgency within the country also affect the small ruminant production.

Table 1: Socio-Economic Characteristics of Small Ruminant Farmers in Ondo State, Nigeria

Variables	Freq.	%	Mean	Variables	Freq.	%	Mean
Sex				Off-Farm Activity			
Male	106	53.0		Yes	107	53.5	
Female	94	47.0		No	93	46.5	
Age				Agricultural Enterprise			
<20	2	1.0	51.4 Years	Crop Farming	127	63.5	127
21-30	7	3.5		Fishery	21	10.5	21
31-40	25	12.5		Poultry	44	22.0	44
41-50	65	32.5		Snailry	3	1.5	3
51-60	57	28.5		Rabbitry	2	1.0	2
>60	44	22.0		Others	3	1.5	3
Marital Status				Farming Experience (in years)			
Single	7	3.5		≤10	70	35.0	18.8 Years
Married	142	71.0		11-20	63	31.5	

Divorced	7	3.5		21-30	40	20.0
Widowed	39	19.5		>30	27	13.5
Separated	5	2.5				
Household Size (in No.)				Management System		
1-5	101	50.5	6 members	Intensive	38	19
6-10	87	43.5		Semi-Intensive	121	60.5
>10	12	6.0		Extensive	41	20.5
Religion				Type of Small Ruminant		
Christianity	129	64.5		Sheep	15	7.5
Islamic	69	34.5		Goat	140	70.0
Others	2	1.0		Both	45	22.5
Education (in level)				Type of Labour		
No Formal Education	8	4.0	11.2 years	Hired Labour	25	12.5
Attempted Primary	8	4.0		Family Labour	170	85.5
Primary	25	12.5		Contractual Labour	4	2.0
Attempted Secondary	7	3.5		Communal Labour	1	0.5
Secondary	55	27.5		Cooperative Membership		
Attempted Tertiary	27	13.5		Yes	33	16.5
Tertiary	70	35.0		No	167	83.5
Primary Occupation				Monthly Income (in Naira)		
Farmer	89	44.5		< 10,000.00	27	13.5
Civil Servant	43	21.5		10,000.01 - 20,000.00	45	22.5
Pensioner	16	8.0		20,000.01 - 30,000.00	60	30.5
Artisan	28	14.0		30,000.01 - 40,000.00	25	12.5
Student	3	1.5		40,000.01-50,000.00	15	7.5
Others	21	10.5		>50,000.01	28	14.0
Method of Acquisition				Land Acquisition		
Contractual	11	5.5		Inheritance	40	20.0
Purchased	140	70.0		Purchased	133	66.5
Inherited	20	10.0		Rent or Lease	19	9.5
Gift	29	14.5		Gift	8	4.0
Loan Acquisition						
Yes	16	8				
No	184	92				

Source: Field Survey, 2021

Table 2: Budgetary Analysis of Small Ruminant Production

Item	Average (in Naira)	Percentage of Cost
Variable Cost		
Cost of Ram	10,057.50	8.7
Cost of Ewe	12,492.50	10.8
Cost of Lamb	4,700.00	4.1
Cost of Billy	17,742.50	15.3
Cost of Nanny	35,502.50	30.7
Cost of Kid	10,885.00	9.4
CST of Medicine	4,612.60	4
Cost of Vaccine	1,269.00	1.1
Cost of Veterinary Service	1,982.40	1.7
Cost of Feeds	7,544.25	6.5
Cost of Fuel	335.00	0.3
Cost of Labour	3,505.00	3.0
Cost of Transportation	2,980.125	2.6
Cost of Electricity	330.00	0.3
Cost of Rent	1,610.00	1.4
Cost Others	100.00	0.1
Total Variable Cost	115,648.38	100
Fixed Cost		
Cost of land	20,620.00	41.8
Cost of fencing	6,975.00	14.1
Cost of pen	6,857.50	13.9
Cost of drinkers	1,546.00	3.1
Cost of feeders	2,169.30	4.4
Cost of gen	2,125.00	4.3
Cost of BHTC	4,505.00	9.1
Cost of electricity	277.50	0.6
Cost of water tank	1,425.00	2.9
Cost of farm vehicle	2,800.00	5.7
Cost of others	65.00	0.1
Total Fixed Cost	49,365.30	100
Total Cost (TFC+TVC)	165,013.68	
Total Revenue (TR)	369,340.76	
Gross Margin (TR-TVC)	253,692.39	
Net Farm Income (GM-TFC)	204,327.09	
Benefit Cost Ratio (TR/TC)	2.2382	
Rate Of Return of Investment (GM/TC)	1.5374	
Expense Ratio (TFC/TVC)	0.4269	

Gross Ratio (GM/TR)

0.4468

Source: Field Survey, 2021.

Table 3: Constraints Militating against Small Ruminant's Production in the Study Area

Constraints	Strongly Disagree		Disagree		Agree		Strongly agree		Total Score	Weighted Mean Score	Rank
	Freq	%	Freq	%	Freq	%	Freq	%			
Inadequate capital	1	0.5	6	3	84	42	109	54.5	701	3.51	1 st
High-interest rate of capital	1	0.5	6	3	94	47	99	49.5	691	3.46	2 nd
Scarcity or high cost of land			31	15.5	81	40.5	88	44	657	3.29	3 rd
High cost of transport	1	0.5	37	18.5	91	45.5	71	35.5	632	3.16	4 th
Vagaries of weather	4	2	16	8	132	66	48	24	624	3.12	5 th
Theft	6	3	40	20	81	40.5	73	36.5	621	3.11	6 th
Scarcity/poor drug quality	1	0.5	25	12.5	130	65	44	22	617	3.09	7 th
Scarcity of quality foundation stock	2	1	44	22	104	52	50	25	602	3.01	8 th
Scarcity of suitable equipment			56	28	103	51.5	41	20.5	585	2.93	9 th
Scarcity of skilled and diligent workers			51	25.5	115	57.5	34	17	583	2.92	10 th
Fulani herdsmen	5	2.5	52	26	102	51	41	20.5	579	2.90	11 th
Scarcity of water	6	3	52	26	100	50	42	21	578	2.89	12 th
Low or fluctuating price of stock	4	2	50	25	113	56.5	33	16.5	575	2.88	13 th
Scarcity of concentrates	5	2.5	61	30.5	91	45.5	43	21.5	572	2.86	14 th
Poor market information			83	41.5	72	36	45	22.5	562	2.81	15 th
Occasional market	6	3	68	34	88	44	38	19	558	2.79	16 th
High cost of forages	6	3	77	38.5	74	37	43	21.5	554	2.77	17 th
Outbreak diseases	8	4	70	35	87	43.5	35	17.5	549	2.75	18 th
Problem of litter	14	7	73	36.5	73	36.5	40	20	539	2.70	19 th
Restriction by environmental law	11	5.5	82	41	72	36	35	17.5	531	2.66	20 th
Too much rainfall	11	5.5	90	45	64	32	35	17.5	523	2.62	21 st
Poisoning	9	4.5	92	46	71	35.5	28	14	518	2.59	22 nd
Lack of proper care	9	4.5	105	52.5	59	29.5	27	13.5	504	2.52	23 rd
High mortality	12	6	111	55.5	48	24	29	14.5	494	2.47	24 th
Fluctuating quality of concentrates and forages			39	19.5	120	60	41	20.5	479	2.40	25 th
Lack of rainfall	17	8.5	115	57.5	45	22.5	23	11.5	474	2.37	26 th

Source: Field Survey, 2021.

IV. DISCUSSION

4.1 SOCIO-ECONOMIC CHARACTERISTICS OF RUMINANT FARMERS

The result shows that 53% of the respondents were male while 47% of them were females. The average age distribution of the respondents was 51.4 years. This implies that the matured ones having known the importance of farming enterprise are mostly involved in small ruminant production while the younger ones were less involved in livestock production. This could be attributed to rural-urban migration by the young men for white-collar jobs while some are basically involved in food crop production only. This is in line with the previous that the mean of small ruminant farmers is within the range of 51-60 years [7] and that which states that the majority of the farmers were males (57.87%) as against 42.6% being females and the mean active farming age of small ruminant farmers falls between 45-60 because this group of persons are either retired from other businesses or are tired of the life-styles the city does offer [8]. 71% of the respondents were married, 50.5% were from the household size within range 1-5 while the average household size was 6. This implies that the farmers in the area could readily use family labour in carrying out their farm activities thereby reducing the cost that would have been incurred by hiring labour [9]. This study reports that 35% of the respondents had tertiary education while 27% of them attended secondary school, this made the total of 96% of the respondents had one form of education or the other. This means that majority of the respondents can read and write and this would enable them to easily adopt new innovations and expose them to information that could lead to more efficient farming activities. This corroborates previous studies on the level of education of small ruminant farmers conducted in Ondo State [10,11,12].

Christianity is the religion mostly practised as 64.5% of the respondents were Christians while 35.5% of them were Muslims. The majority of the farmers (44%) were primarily farmers, 21.5% of them were civil servants, 14% were artisans and 8% were pensioners. From this study, 46.5% of the respondents depended solely on net farm income while 53.5% were engaged in off-farm work. The majority of the respondents (86%) earned less than ₦50,000 as their monthly income from off-farm activities. 83.5% of the respondents did not belong to any cooperative society while only 16.5% of them belong to at least one cooperative society, 92% of the respondents have not previously had access to credit loans to support their small production enterprise, while 8% of them had. This could be attributed to the fact that most of the farmers have other sources of income being generated from off-farm activities which serve as household income and from which they use as input to their small ruminant production enterprise. This

could also be said that most of the respondents did not belong to any cooperative membership because of lack of interest, lack of awareness or difference in ideology. This implies that most of the small ruminant farmers who do not belong to any cooperative society might find it difficult to get access to credit loans that could be used to help enlarge their production enterprise, hence limiting their profit margin. The finding from this study corroborates with a previous study which states that about 67.3% of the respondents are not members of any group while the remaining 32.7% belong to one form of association or the other [10].

The result of this study revealed that 63.5% of the respondents were into crop farming, 22% of them were into poultry farming and 10.5% of them were into fishery farming. 35% of the small ruminant farmers had less than 10 years of farming experience and 13.5% had above 30 years experience. 31.5% and 20% of the respondents had 11-20 and 21-30 years of farming experience with an average of 18 years and 8 months of farming experience. This showed that farming is not strange among the respondents in the study area. This finding of this study corroborates with the study that reported that 29.4% of respondents had below 10 years of farming experience, 38.1 had 12-20 years of experience, while 32.6% had more than 20 years of farming experience with the mean within the range of 11-20 farming year experience [8].

This study reports that 7.5% of the respondents reared sheep, 70% reared goats while 22% had both sheep and goats on their farm, and 70% of the animals were purchased. These data imply that goat was the commonest animal reared by the farmers. The ratio of small ruminants agrees with the World Almanac Education Group that Nigeria has a livestock population of 24 million goats, 13.5 million sheep [13]. It was revealed that the majority (75%) of the respondents kept goats, sheep were kept by 10% of the respondents while goats and sheep (combine) accounts for 13.3% [14]. However, 60.5% of the respondent were practising semi-intensive management systems while the least percentage 19% practised intensive management systems. This implies that the farmers provide basic needs such as shelter and limited feeding for the animals while they left the animals to scavenge to meet up with their requirements. The findings of this study contradict a study that showed that 44% of the farmers practised permanent confinement (intensive system), 41.25% of the farmers practised partial confinement or tethering (semi Intensive system) and 15% of the sampled respondents used the free-range (extensive) management system where the animals are allowed to roam about and feed themselves [12].

4.2 PROFITABILITY OF SHEEP AND GOAT PRODUCTION

The result from the budgetary analysis of this study revealed that variable cost takes more than 50% of the total cost of production of small ruminants. The outcome of the cost analysis is in line with previous findings where it was reported that variable costs always take more than 50% of the cost of marketing of most agricultural enterprises [15,16,17]. Again, the value of Return on Investment (ROI) of 1.54 implies that small ruminant producers will realize 1.54 on each naira expended. The value of Expense Structure Ratio (ESR) of 0.42 indicated that the fixed cost incurred in the business is less than money expended on the variable cost by 0.58%, while gross ratio (0.45) also revealed that total revenue accrued from small ruminants production is greater than total cost expended in the course of the business by 55%. The result of the gross margin and net farm income shows ₦253, 692.39 and ₦204, 327.08 respectively. All these profitability measures confirmed and reiterated the profitability of small ruminants' production in the study area.

4.3 CONSTRAINTS MILITATING AGAINST SMALL RUMINANT'S PRODUCTION IN THE STUDY AREA

Inadequate capital and high-interest rate of capital were the two most challenging constraints faced by the small ruminant farmers in the study area. This implies that some people do not venture into small ruminant production or practiced it on large scale because of inaccessibility to fund (capital) and a high rate of interest on capital. This aligns with previous findings where it was reported that the respondents identified the inadequate fund as their major constraints that militated against small ruminant production in the study area [12,14]. Unavailability of funds (38.6%), theft (60.4%), accessibility to the market (50.5%), no credit facilities (70.3%) and transportation problems (74.3%) were seen as constraints facing small ruminant livestock animals [11]. It was stated in a study that pilfering (theft) was ranked the 8th constraint faced by the respondents, and this is almost in tandem with that of this study as theft was ranked 6th [12]. The result of this study also agrees with a previous study which states that the cost of labour, theft and unavailability of funds are major constraints affecting small ruminant livestock animals [18]. In this study, high cost of transportation was ranked 4th which indicates that it is one of the challenges faced by the respondents, but the finding in study [11] negates this as it was recorded there that 74.3% of the respondents felt that transportation was never a problem for them in the study area.

V. CONCLUSION

In this study, it was observed that small ruminant production is profitable and viable in the study area and the majority of the small ruminant farmers in the study area reared goats using intensive management systems, this could be attributed to the fact that it is possible to rear goats on free-range which is less costly and with less managerial involvement. This study also revealed that the majority of the small ruminant farmers in the study area were Christians, married, male with an average age of 51.4 years and household size 6. From this study, 96% of the respondents had one form of education or the other, therefore, they will be able to read and understand instructions required for technical expertise in animal husbandry. The majority of the respondents were primarily farmers, they mostly practised crop farming alongside small ruminant production, while 53.5% of them were involved in other off-farm generating income activities. This study revealed that 83.5% of the respondents did not belong to any cooperative society which implied that there was a limited number of respondents that had access to credit loans to just 8%.

It could also be concluded from this study that small ruminant production is profitable and viable in the study area with; Return on Investment (ROI) of 1.54 which implies that small ruminant producers will realize 1.54 on each naira expended, the gross margin and net farm income are ₦253, 692.39 and ₦204, 327.08 respectively, Expense Structure Ratio (ESR) of 0.42 and gross ratio (0.45) which also revealed that total revenue accrued from small ruminants production is greater than total cost expended in the course of the business by 55%. The study as well identified inadequate capital and high-interest rate of capital as the two most challenging constraints faced by the small ruminant farmers in the study area.

REFERENCES

- [1] Rivera, S.F., Okike, I., Manyong, V., Williams, T.O., Kruska, R.L. and Tarawali, S.A. (2004). Classification and description of the major farming systems incorporating ruminant livestock in West Africa. *Sustainable crop-livestock production in West Africa*. Retrieved June 20th, 2020, from http://ilri.org/InfoServ/Webpub/fulldocs/SustainableCropLivestock/Pg087_122%20Fernandez.pdf-
- [2] Kosgey, I.S. (2004). Breeding objectives and breeding strategies for small ruminants in the tropics. PhD Thesis, Wageningen University, The Netherlands, pp. 272, 2004.
- [3] Umunna, M.O., Olafadehan, O.A. and Arowona, A. (2014). Small Ruminant Production and Management Systems in Urban Area of Southern Guinea Savanna of Nigeria. *Asian Journal of Agriculture and Food Science*, 2(2).
- [4] Otaru, S.M. and Iyiola-Tunji, A.O. (2015). Small Ruminant Production and Management Techniques. Retrieved 14th

- Aug. 2020, from <https://www.researchgate.net/publication/283513451>
- [5] Tadesse, Y. (2012). Success and failure of small ruminant breeding programmes: Impact of indigenous knowledge, genotype and local environment (Review). Retrieved 20th June. 2020. Retrieved June 20th, 2020, from <http://www.articlesbase.com/science-articles/success-and-failure-of-small-ruminant-breeding-programmes-impact-of-indigenousknowledge-genotype-and-local-environment-review6164993.html>
- [6] Wikipedia (2020). Retrieved June 21st, 2020, from https://en.wikipedia.org/wiki/Ondo_State
- [7] Adeshinwa, A.O.K., Okunola, J.O. and Adewumi, M.K. (2004). Socio-economic characteristics of ruminant livestock farmers and their production constraints in some parts of Southwestern Nigeria. *Livestock Research for Rural Development*. 16:61. Retrieved September 13, 2021, from <http://www.lrrd.org/lrrd16/8/ades16061.htm>
- [8] Alufohai, G.O., Ejenavi, F., Koyenikan, M.J. (2012). Effect of Credit on Small Ruminant Production in Delta State, Nigeria: Implications For Sustainable Development. Ontario International Development Agency. Available at <http://www.ssrn.com/link/OIDA-Intl-Journal-Sustainable-Dev.htm>
- [9] Fakoya, E.O. and Oloruntoba, A. (2009). Socio-Economic Determinants of Small Ruminants Production Among Farmers in Osun State, Nigeria. *Journal of Humanities, Social Sciences and Creative Arts*, 4(1): 90-100.
- [10] Adetarami, O., Alfred, S.D.Y., Johnson, S.B., and Aminu, G.O. (2020). Socio-economic and Institutional Factors Affecting the Adoption of Improved Breeds of Small Ruminants in Nigeria. *Anatolian Journal of Economics and Business*. 4: 109-127
- [11] Adelusi, F.T., Adedokun, S.A., Ojo-Fakuade, F.F., Odewale, M.O., and Babatunde, R.O. (2019). Social Factors Influencing Small Ruminant Livestock Production in Offa Local Government Area of Kwara State. *Direct Research Journal of Veterinary Medicine and Animal Science*. 4: 2734-2166.
- [12] Offor E.I., Ekweanya, N.M. and Oleka, A.C. (2018). Effects of Socio-Economic Factors on Small Ruminant Production in Ohafia Agricultural Zone of Abia State, Nigeria. *Agro-Science Journal of Tropical Agriculture, Food, Environment and Extension*. 17 (3): 7-11.
- [13] Omoike, A. (2006). Prevalence of Diseases among Sheep and Goats in Edo State Nigeria. *Journal of Agriculture and Social Research*, 6(2): 23-31.
- [14] Aphunu, A., Okoedo, and OKojie, D.U. (2011). Small ruminant production constraints among farmers in Ika North-east Local Government Area of Delta State, Nigeria. *Applied Science Research*, 3 (2): 370-376
- [15] Ada-Okungbowa, C.I., Oghorodi, O. and Omofonmwan E.I. (2013). Profitability of palm oil marketing in Ethiope East Local Government Area of Delta State, Nigeria. *Journal of Applied Science and Agriculture*, 8(4): 342-345.
- [16] Fatuase, I.A., Oparinde I.S. and Aborisade, A.S. (2015). Performance and Resource-Use Efficiency of Yam Production in Owo Local Government Area of Ondo State, Nigeria. *Applied Tropical Agriculture*, 20: 83-88.
- [17] Oseni, J.O., Olutumise, A.I. and Olutumise, B.O. (2018). Performance evaluation of cocoa marketing in Osun State, Nigeria. *Journal Perspektif Pembiayaan dan Pembangunan Daerah*, 6(1): 2355-8520.
- [18] Babu, J., Bo, L. and Zcatalbas, O. (2010). Determining information sources used by crop producers: A case study of graziantep province in turkey. *African Journal of Agricultural Research*, 5:23-40.